GSJ: Volume 7, Issue 12, December 2019, Online: ISSN 2320-9186
www.globalscientificjournal.com

MOTHER'S KNOWLEDGE AND ATTITUDE TOWARDS CHILDHOOD IMMUNIZATION IN A RURAL COMMUNITY

Authors, name. 1 Azra Shaheen, Muhammad Afzal , Iram Majeed , Syed Amir Gilani.

Mother's knowledge and attitude towards childhood immunization in a rural community

Abstract:

Background: Vaccination is a highly effective method of preventing certain infectious diseases. Vaccines are generally very safe and adverse reactions are uncommon. Routine immunization programs protect most of the world's children from a number of infectious. The purpose of this study to observe mothers knowledge and attitude towards childhood immunization. **Method:** Questionnaire adopted from (Yousif, Albarraq, Abdallah, & Elbur) is used to collect data from people of Ali Raza Abad Questionnaires consist of 3 section containing 20items, (Section A) Demographic data (Section B) composed on Knowledge and attitude of mothers towards mothers. The participants answered the items using4-point Likert scale with (1 = Strongly agree; 2 =yes ; 3 = no 4=don't know).After moving Questionnaire among the participants the data was analyzed through SPSS version 21 for Descriptive statistics and finding mean, frequencies, percentage and standard deviations. Consent was taken from all the participants and free hand were given to the participants to take part in the study or refused to participate. In case of illiteracy, the research assistant's translate the questions in (Urdu).**Results:** There were a total of 236 mothers included in my study. The majority (53.0.4%) of the Mother's either yes that child immunization is important. Most (91.5%) of them considered immunization

is more beneficial than harmful and (42.3%) strongly agreed or yes that vaccines are safe. Out of mothers (45.3%) and (30.1%) mother's aspects are yes or agreed that child immunization is not prohibited in religion. 41.5% mothers are answered yes,18.2% agreed the administration of vaccines is associated with side effects respectively. Nearly forty percent of mothers were not sure if the child becomes infected after immunization with the disease/s against which he/she was vaccinated or not. **Conclusion:** The purpose of the study was to determine the knowledge and attitude of mothers towards childhood immunization in rural community Ali Raza Abad, Lahore. Proper guidance is necessary to improve childhood immunization. Every effort should be beneficial for people who are less aware from childhood immunization. Health worker should improve this information by holding workshops and other different strategies to change people wrong perception towards childhood immunization.

Keywords:

Mother's, knowledge, attitude, childhood immunization

1. INTRODUCTION

Health is a complete state of physical, mental, social wellbeing and not merely absence of disease.The development of community services systems for children with special health needs is challenge for pediatricians, families, managed care organizations and public agencies (WHO, 2017).

A child who has not vaccinated could become paralyzed or die. Vaccination is the only way to protect your family and community. Vaccines save lives, prevent disease and disability, but also represent good value among health intervention (WHO&UNICEF 2016).

"Protect children take action" (Vekemans et al., 2019).

Vaccination is a highly effective method of preventing certain infectious diseases. Vaccines are generally very safe and adverse reactions are uncommon. Routine immunization programs protect most of the world's children from a number of infectious diseases that previously caused millions of deaths in each year (Halsey & Galazka, 2017).

Neonates and infants suffer various microbial infections causing millions of deaths worldwide. Lack of immunity cause newborns to become infected which reduce the memory loss response of antigens. Efforts from high risk of infection may give support and protection to population. Early birth is an important point of contact for effective vaccination, which provides early protection for newborns. Increasing and improving the available source of newborn vaccination is a global priority for health (Alruwaili et al., 2018).

Most diseases against which children are vaccinated occur during the first years of life. Immunization acts like resistance against infection. Multi-doses of the same vaccine given at intervals are important for child immunity. More than one vaccine at the same time has no negative impacts on child immunity (Higgins, Trujillo, & Keech, 2016).

Vaccines protect public against harmful and potentially deadly diseases. Because of vaccinations many dangerous diseases are now preventable (Thomas, 2015).

Pregnant women, small children, elderly people with poor health and anyone with a chronic condition, like asthma , heart disease, are at higher risk for severe infection and death (Borrow et al., 2017)

Vaccinating pregnant women has benefit of protecting their newborns. There is currently no vaccine for babies under six month. Seasonal influenza vaccines offer immunity to the 3 most prevalent strains circulating in any given season. It is the best way to reduce chances of severe flu spreading it to others and have been used for more than 60 years. Avoiding the flu means avoiding extra medical care costs and save income from missing days of work (Grohskopf et al., 2019).

Vaccine not only saves lives it also helps children to learn and grow. Health care provider should spend more days at school to avoid risks of childhood illnesses. It can reduce costs of families and communities by protecting in simple way (Stutzman & Cortney, 2019).

Immunization is the process to develop resistant to infectious disease by inoculation of vaccine in body. Vaccine motivate to body self-immune system which act as defense mechanism of person to reduce infection (WHO).

Immunization not only decreases morbidity and mortality from infectious diseases but also prevent disease to transmit in community population (Kamble, Shelke, & Patavegar, 2015).

Some widespread fears of people that vaccine increases risk of autism. The safety of vaccinations has been repeatedly tested across large groups of people. High quality research studies involving hundreds of thousands people have consistently shown that vaccinations do not cause autism. These are all self-created myths and misconception not a reality (Dudley et al., 2018).

Child may still be vaccinated if he / she has low-grade fever cold, runny nose, cough, Ear infection and mild diarrhea .There is no health benefit to waiting to vaccinate your child if he /she has a mild illness. It's important that children get their vaccines on time even if they don't feel well so they're protected against serious diseases. Child's doctor can help to determine all these protections. Mild illness is common after immunization that is why this is not a problem to avoid your child from immunization (Mohamed & Idris, 2018).

It's important to keep child's immunizations on schedule and up to date, but if your child misses a scheduled dose he / she can catch up it later. The complete updated schedule of immunizations for children ages 0-18 can be completed with all instructions (Ventola, 2016).

Most parents and healthcare providers do a good job of keeping up with immunizations. Yet studies show that about one-fourth of preschool children are missing at least 1 routine vaccine. Most states will not let your child start school without a complete vaccine record. Sometimes a vaccine is missed when a child is sick. No matter what the reason, it's important to make up missed immunizations (Bradford & Mandich, 2015).

Mothers are more likely to vaccinate their child with polio vaccine, although at the same time they may also have doubts about vaccination. There is a positive correlation between parental beliefs and information supplier. In other words any increase in mother's knowledge and practice will decrease infection (Abdullahi et al., 2016).

Islam is not the only religion in the world that has come into favor with vaccine recommendations. Of the major religions practiced in the United Church of Christ, Scientist and the Dutch Reformed Church are also encourage to vaccinate children (Wombwell, Fangman, Yoder, & Spero, 2015). It means that vaccine is necessary for health, so it cannot be prohibited by any religious (Levin, 2016).

In some areas, most of the people are guided by traditional conceptions; they believe "birth and death are provided by God". Some side effects of vaccines lead them to overcome with wrong conception. Using same needles, cottons, unregistered health or unqualified care providers due to this mostly people are afraid from HIV/AIDS(Tan & Matthews, 2018). So, either there will be side effects not people taking their babies for vaccination to health care providers due to using improper procedure of vaccination, such as An example of this belief can be found in a vaccine studied in five, diphtheria, pertussis, tetanus, Homophiles' influenza type B bacterial meningitis and one cause of polio. So it is responsibilities of health care provider to take action against these misconception (Wilson, 2017).

Tuckers studied women's views about vaccination. Some women have expressed concern that the vaccine places too much burden on the child's immune system and able to control (Tukers, 2017).

Vaccinations can prevent more than a dozen serious diseases. Failure to vaccinate may mean putting children at risk for serious and sometimes fatal diseases (Habib et al., 2018).

Infants are particularly vulnerable to an infection that is why it is so important to protect them with immunization. Immunizations help prevent the spread of disease and protect infants and toddlers against dangerous complications (Ventola, 2016).

LITERATURE REVIEW

Infants and children have significantly reduced the incidence and associated risks of multiple communicable diseases in Western countries due to vaccination strategies. The chances of vaccine against illnesses may never be greater, but their potential can be demonstrated only if parents follow childhood immunization recommendations. Health care providers, as well as community and government-based interventions, must continue to increase vaccine coverage to

reduce illnesses or deaths from vaccine-preventable diseases (Phadke, Bednarczyk, Salmon, & Omer, 2016).

Current recommendation is to vaccinate all children from 6 months up to 19 years with particular emphasis on children under the age of 5 year or with chronic illnesses with Influenza vaccines. Nearly 66.5% of the parents knew that vaccination of children against seasonal influenza importance. Parents might be motivated to vaccinate their children if educated about the central role of children in transmitting the infection in households and communities, beside the health and economic burden of contracting influenza (Kumar & Kavinprasad, 2018).

A recent study in Malaysia reported that children whose mothers do not trust that vaccines can prevent spread of diseases were three times at higher risk of incomplete immunization. Another study in the United States of America (USA) documented similar findings that attitude, belief and behavior of parents contribute in child immunization status (Wang & Liang, 2015).In addition; studies have showed that religious belief and source of information may influence the attitude of parents towards childhood immunization. This paper reports the predictors of inadequate knowledge on childhood immunization and negative attitude towards childhood immunization among parents in Hulu Langat district (Erener-Ercan et al., 2015).

Vaccine hesitancy among parents has led to re-emergence of vaccine preventable diseases. In Malaysia, measles cases had increased by three times in 2015 compared to previous year. Immunization coverage has always been above 95% since 2009. However, in 2014, Mumps-Measles-Rubella (MMR) coverage has a significant drop to 93.4% (Brinkman et al., 2019).

Mothers need reliable and accurate information about the actual contraindication to vaccination. 61.7% of the participating parents were considered that they have no know that there were no contraindications to common nasal passages, ear infections, and diarrhea vaccination (ALAmri, Horaib, & Alanazi, 2018) .

Immunization is an effective prevention and intervention to against any illness. Yet the benefits of vaccinations are not reaching many children who are at greater risk of developing diseases through these vaccines. Hospitalized mothers have the best information about their children's vaccinations until the first booster. 100% coverage for up to 18 months due to security schemes

and other preventive measures are used against disease (Yang, Song, Noh, Cheong, & Kim, 2015).

Every effort should be made to supplement the child's immunization because it has been observed that partially vaccinated and non-vaccinated children are more malnourished than their counterparts (Sharma, Kennedy et al. 2019).

Missed vaccination is a common problem worldwide. According to present study knowledge and attitude towards EPI, 8.79% children are not fully immunized and 0.24% not immunized at all and misconception is the main reason behind this. The health care workers play a role in motivating mothers by imparting knowledge to this partially immunized and non-immunized information (Paterson et al., 2016).

Immunization coverage in South Asia has increased from about 5% in 1970s to nearly 50% at present but still half of the children remain unimmunized (Frenkel, 2018).In a recent analysis, WHO estimated that if all the vaccines currently available against childhood diseases are widely adopted, and if immunization programmers can raise vaccine coverage to a global average of 90%.Vaccines would prevent an additional two million deaths a year among children under five by 2015 (Gerlier et al., 2017).

Maternal awareness on under-5 child immunization in some areas is good as the study revealed that the mothers possessed good knowledge and positive attitude towards EPI. However, still there is some dropout of children from immunization. Misconceptions and misbelieves are the main barrier for non-immunization of the children. The field workers in health sectors should be properly trained and monitored for this purpose. Educational program for the masses and joint collaborative efforts against misconceptions on immunization is necessary (Chris-Otubor, Dangiwa, Ior, & Anukam, 2015).

PROBLEM STATEMENT

Overall, the current study revealed that parents' knowledge of vaccination was low, with some serious misconceptions. It has been reported that there is no association between parental

knowledge and vaccination coverage rate, and people accept vaccination despite limited information about it. The reason for this was due to the fact that although parents resist vaccination, they want to protect their children from harm.

Worldwide, childhood immunization prevents almost two million deaths/year. Nevertheless, 2.5 million deaths a year result from diseases that can be prevented by vaccination, especially in poor Asian and African countries under the age of 5. In many developing countries, vaccination coverage has reached a level and even achieved good coverage rates, and children have not yet been exposed to polio vaccination.

Therefore, with the encouragement of parents, their children need to be vaccinated against polio. Therefore, this study was conducted to assess the mothers' knowledge and attitudes about the obligatory vaccination of children as well as to identify their commitment.

Purpose of the Study

Our study purpose is to assess the knowledge, and attitude about childhood immunization and their related factors among mothers.

SIGNIFICANCE OF THE STUDY

Infant and Child mortality and morbidity is one of the major public health problem due to infectious diseases. The aim of this study is to find out current situation of immunization status of children health. The researcher believes that the results of this study will be helpful to following:

Children: This study will make remarkable impact for children health. Through vaccination they can spend a healthy life.

Parents: The consequence of this study helped as strategies to enhance the knowledge of parents regarding to their childhood immunization. This information can help to against their false belief and myths about immunization.

Health Care Practitioners: This study provides knowledge and advantages of immunization in helping to avoid childhood infectious diseases.

Future researchers: The results of this survey will provide a great contribution for the future researchers which will serve as reference of practices about childhood immunization and may encourage them to seek out deeper knowledge for their future planning (Ramadan, Soliman, & El-kader, 2016)**.**

MATERIAL AND METHODS

Study Design: A quantitative descriptive cross-sectional study design used to assess the Mothers Knowledge and attitude about childhood immunization.

Settings: Study will conduct in the community Ali Raza Abad

Duration of Study: 4 Month

Target population: Mothers of community Ali Raza Abad

Sampling Technique: A non-probability convenient sampling technique was utilized to select the proposed sample of community mothers.

Equipment: Data will collect by using a two part questionnaire. Part one is the demographic data and Second part is on question year.

DATA COLLECTION PROCEDURE

Questionnaire adopted from (Yousif, Albarraq, Abdallah, & Elbur) is used to collect data from people of Ali Raza Abad Questionnaires consist of 3 section containing 27items, (Section A) Demographic data (Section B) composed on Knowledge and attitude of mothers towards mothers. The participants answered the items using4-point Likert scale with (1 = Strongly agree; 2 =yes ; 3 = no 4=don't know).After moving Questionnaire among the participants the data was analyzed through SPSS version 21 for Descriptive statistics and finding mean, frequencies, percentage and standard deviations. Consent was taken from all the participants and free hand were given to the participants to take part in the study or refused to participate. In case of illiteracy, the research assistant's translate the questions in (Urdu).

Results:

According to this study, I was able to assess the knowledge and attitude towards immunization among mothers rural community of Ali Raza Abad, Lahore. The results have been Table 02 and Table 03.Responses of community people categorized in yes, no, donotknow and strongly agree.

Mothers Knowledge towards childhood immunization

Sr#	Mothers Knowledge about childhood immunization	Yes		No	Don't know	Strongly Agree			
1	Routine vaccination prevents children from some infectious diseases and its complications.	n	%	n	%	n	%	n	%
		129	54.7	18	7.6	24	10.2	65	27.5
2.	First dose in vaccination given at birth.	104	44.1	73	30.9	34	14.4	25	10.6
3	Most diseases against which children are vaccinated occur during the first years of life	85	36.0	60	25.4	44	18.6	47	19.9
4	Multi-doses of the same vaccine given at intervals are important for child immunity.	117	49.6	56	23.7	13	5.5	50	21.2
5	More than one vaccine at the same time have no negative impacts on child immunity	108	45.8	60	25.4	29	12.3	39	16.5
6	Is it important to vaccinate children during immunization campaigns?	124	52.5	34	14.4	28	11.9	50	21.1
7	It is recommended to vaccinate children against seasonal influenza	80	33.9	88	37.3	33	14.0	35	14.8
8	Immunization can cause autism.	95	40.3	51	21.6	24	10.2	66	28.0
9	Common colds, ear infection, and diarrhea are not contraindications for vaccination	120	50.8	70	29.7	27	11.4	19	8.1
10	Vaccine is important for child health	92	39.0	68	28.8	20	8.5	56	23.7

Mother's attitude towards immunization

Sr#	Mothers Knowledge about childhood immunization	Yes		No		Don't know		Strongly Agree	
11	Child immunization is important.	n	%	n	%	n	%	n	%
		125	53.0	43	18.2	24	10.2	44	18.6
12	Immunization is more beneficial than harmful	101	42.8	90	38.1	25	10.6	20	8.5
13	Vaccines for child immunization are safe	68	28.8	86	36.4	40	16.9	42	17.8
14	Child immunization is prohibited in religion.	107	45.3	71	30.1	22	9.3	32	13.6
15	Immunization associated with side effects.	98	41.5	71	30.1	43	18.2	24	10.2
16	Child can become infected after immunization with the disease/s against which he/she was vaccinated.	122	51.7	49	20.8	25	10.6	40	16.9
17	Compliance to immunization schedule is important	74	31.4	83	35.2	38	16.1	41	17.4
18	Immunization keeps your child healthy.	82	34.7	52	22.0	40	16.9	62	26.3
19	Immunization reduces child mortality and morbidity	118	50.0	85	36.0	24	10.2	9	3.8
20	Polio vaccine received immediately after birth	86	36.4	80	33.9	27	11.4	43	18.2

Discussion:

The purpose of the study was to determine the knowledge and attitude of mothers towards immunization in rural community Ali Raza Abad, Lahore. This was a cross sectional study. It is

increasingly acknowledged that there is limited awareness of immunization and health behaviors in communities.

There were a total of 236 mothers included in my study. Mothers had good knowledge of aspects relating to the overall role of vaccination in the prevention of
infectious diseases timing of the first dose in the vaccination schedule.

Mother's attitudes towards childhood immunization were shown in Table .The majority (53.0.4%) of the Mother's either yes that child immunization is important. Most (91.5%) of them considered immunization is more beneficial than harmful and (42.3%) strongly agreed or yes that vaccines are safe. Out of mothers (45.3%) and (30.1%) mother's aspects are yes or agreed that child immunization is not prohibited in religion. 41.5% mothers are answered yes,18.2% agreed the administration of vaccines is associated with side effects respectively. Nearly forty percent of mothers were not sure if the child becomes infected after immunization with the disease/s against which he/she was vaccinated or not. The majority mother's views were yes (31.4%) and (16.9%) of the mothers agreed that compliance to immunization schedule is important and immunization keeps the child healthy respectively.

Analysis of the demographic characteristics of the parents involved in this study showed that most of the sample was made up of the mothers (Vonasek et al., 2016). About half of the mothers were in higher education. This can be explained by the fact that most o f the participants lived in the city where they were born and had better chances of completing the ir higher education. Evaluation of the knowledge of the parent in the current study revealed differences in responses to questions designed to test their knowledge of childhood immunization. In contrast, more than 85% of participants knew the role of childhood vaccination in preventing life-threatening diseases in the study conducted in the UAE (Gowin, Wysocki, Michalak, & Januszkiewicz-Lewandowska, 2017). Only 41.6% of the interviewees knew the importance of multi-dose administration of the same vaccine at child immunity intervals. (Kumar & Kavinprasad, 2018) As a result, parents might believe that only the first shot of the vaccine is enough to develop immunity and protect their children.

To date, there is no scientific evidence to support the concerns of parents about combined immune overload vaccines. Just 37.1% of participants recognized that more than one vaccine

given at the same time had no negative impact on infant immunity. By contrast, in another study, the parents believed that the immune system of their child could be weakened by too many immunizations (O'Leary & Maldonado, 2018). A large number of children can be reached during mass immunization that, for a variety of reasons, are never immunized by routine immunization or are unable to complete the recommended immunization schedule. In the current study (73.9%) of parents agreed on the value of vaccinating children during vaccination campaigns (Borrow et al., 2017). In Uganda, parents/careers felt that vaccines used during mass immunization were either not safe because they expired or were deliberately contaminated with harmful agents intended to harm their children (Shinjoh, Hoshino, Takahashi, & Nakayama, 2015). The current recommendation in the United States is to vaccinate all children between 6 months and 19 years of age, with particular emphasis on children under 5 years of age or chronic influenza vaccines (Ortiz et al., 2016). Nearly 45% of parents knew that seasonal influenza vaccination is important for children. Parents may be encouraged to vaccinate their children if they are educated about the central role of children in the transmission of infection in households and communities, in addition to the health and economic burden of influenza contracting (Ortiz et al., 2016). Physicians need accurate and reliable data about real vaccine contraindications. 61.7 percent of the participating parent found or did not know that common colds, ear infection, and diarrhea are not vaccine contraindications. Delaying immunization based on misunderstandings of contraindications puts a child or child at risk (ALAmri et al., 2018). There may also be systemic reactions, including fever, irritability, somnolence, and rash. More than half of the recruited mothers strongly agreed or yes that side effects-related immunization (Negussie, Kassahun, Assegid, & Hagan, 2015). Mothers should be educated about these side effects. The results of this survey showed an important correlation between parent education and childhood immunization awareness and attitudes. Higher educational level, of no doubt, helps the mothers to understand the educational messages. In addition, these parents have better chances of acquiring significant media knowledge of immunization; this finding correlates with the findings of other studies Major differences are found in the current study between mother knowledge. Moms used to accompany their children on immunization visits almost in all cases. Communication with health care providers can be responsible for the observed difference in the knowledge of mothers.

Conclusion:

The purpose of the study was to determine the knowledge and attitude of mothers towards childhood immunization in rural community Ali Raza Abad, Lahore. A questionnaire was distributed to community people to assess knowledge and attitude regarding to childhood immunization. Statistical tools were used to analyze results. However, community mothers had sufficient knowledge about childhood immunization and its importance. Childhood immunization with its benefits was assessable instruction.

Limitations:

Time was too short for this study with short sample size. The study focus was only rural community .Close ended questionnaire was used in this study. This study only focuses on children.

Recommendation:

Proper guidance is necessary to improve childhood immunization. Every effort should be beneficial for people who are less aware from childhood immunization. Health worker should improve this information by holding workshops and other different strategies to change people wrong perception towards childhood immunization.

References:

Abdullahi, A., Hassan, A., Kadarman, N., Saleh, A., Baraya, Y. u. S. a., & Lua, P. L. (2016). Food safety knowledge, attitude, and practice toward compliance with abattoir laws among the abattoir workers in Malaysia. *International journal of general medicine, 9*, 79.

ALAmri, E. S., Horaib, Y. F., & Alanazi, W. R. (2018). Knowledge and Attitudes of Parents on Childhood Immunization in Riyadh, Saudi Arabia. *Egyptian Journal of Hospital Medicine, 70*(1).

Alruwaili, A. A. S., El-fetoh, N. M. A., Alruwaili, T. A. S., Alanazi, W. A. S., Alhazmi, H. H. R., Alanazi, N. A. B., . . . Alrwaili, A. H. (2018). Knowledge, Attitude and Practice of the Parents Regarding Child Vaccinations in Arar, Northern Saudi Arabia. *The Egyptian Journal of Hospital Medicine (July 2018), 72*(9), 5178-5182.

Borrow, R., Alarcón, P., Carlos, J., Caugant, D. A., Christensen, H., Debbag, R., . . . Head, C. (2017). The Global Meningococcal Initiative: global epidemiology, the impact of vaccines on meningococcal disease and the importance of herd protection. *Expert review of vaccines, 16*(4), 313-328.

Bradford, W. D., & Mandich, A. (2015). Some state vaccination laws contribute to greater exemption rates and disease outbreaks in the United States. *Health Affairs, 34*(8), 1383-1390.

Brinkman, I. D., Smits, G., Ten, H. H., Jongerius, M., Abreu, T., Hahné, S., . . . Rots, N. (2019). Early measles vaccination during an outbreak in The Netherlands: reduced short and long-term antibody responses in children vaccinated before 12 months of age. *The Journal of infectious diseases, 220*(4), 594.

Chris-Otubor, G., Dangiwa, D., Ior, L., & Anukam, N. (2015). Assessment of knowledge, attitudes and practices of mothers in Jos North regarding immunization. *IOSR Journal of Pharmacy, 5*(6), 34-45.

Dudley, M. Z., Salmon, D. A., Halsey, N. A., Orenstein, W. A., Limaye, R. J., O'Leary, S. T., & Omer, S. B. (2018). Do Vaccines Cause Autism? *The Clinician's Vaccine Safety Resource Guide* (pp. 197-204): Springer.

Erener-Ercan, T., Aslan, M., Vural, M., Erginoz, E., Kocazeybek, B., Ercan, G., . . . Perk, Y. (2015). Tetanus and diphtheria immunity among term and preterm infant-mother pairs in Turkey, a country where maternal and neonatal tetanus have recently been eliminated. *European journal of pediatrics, 174*(3), 339-344.

Frenkel, L. (2018). Infectious diseases as a cause of global childhood mortality and morbidity: Progress in recognition, prevention, and treatment. *Adv Pediatr Res, 5*, 14.

Gerlier, L., Lamotte, M., Grenèche, S., Lenne, X., Carrat, F., Weil-Olivier, C., . . . Eichner, M. (2017). Assessment of public health and economic impact of intranasal live-attenuated influenza vaccination of children in France using a dynamic transmission model. *Applied health economics and health policy, 15*(2), 261-276.

Gowin, E., Wysocki, J., Michalak, M., & Januszkiewicz-Lewandowska, D. (2017). Too young to be vaccinated: hospitalizations caused by varicella among children in the first year of life. *International Journal of Infectious Diseases, 62*, 52-55.

Grohskopf, L. A., Alyanak, E., Broder, K. R., Walter, E. B., Fry, A. M., & Jernigan, D. B. (2019). Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices—United States, 2019–20 influenza season. *MMWR Recommendations and Reports, 68*(3), 1.

Habib, R. F., Alsubhi, R. A., Saadawi, D. W., Hatim, R., Saleh, A., Alrashidi, A. A., & Bukhari, M. A. (2018). Assessment of knowledge, attitude and practice of parents towards immunization of children in Saudi Arabia, 2018. *Egypt J Hosp Med, 71*(2), 2585-2589.

Higgins, D., Trujillo, C., & Keech, C. (2016). Advances in RSV vaccine research and development–A global agenda. *Vaccine, 34*(26), 2870-2875.

Kamble, M. S., Shelke, S. C., & Patavegar, B. (2015). A Cross-Sectional Study on Immunization Status among Anganwadi Children in an Urban Community of Pune. *Indian Journal of Forensic and Community Medicine*, *2*(3), 150-153.

Khan, M. T., Zaheer, S., & Shafique, K. (2017). Maternal education, empowerment, economic status and child polio vaccination uptake in Pakistan: a population based cross sectional study. *BMJ open*, *7*(3), e013853.

Kumar, P. T., & Kavinprasad, M. (2018). A study to assess the parent's knowledge and attitudes on childhood immunization. *International Journal Of Community Medicine And Public Health*, *5*(11), 4845-4848.

Levin, H. Y. (2016). Why Some Religious Accommodations for Mandatory Vaccinations Violate the Establishment Clause. *Hastings LJ, 68*, 1193.

Mohamed, T. M. O., & Idris, K. A. M. A. (2018). ASSESSMENT OF THE KNOWLEDGE, ATTITUDE, AND PRACRTICE OF SUDANESE MOTHERS TOWARD CHILDHOOD VACCINATION, AT KHARTOUM NORTH HEATH CENTERS: SUDAN.

Negussie, A., Kassahun, W., Assegid, S., & Hagan, A. K. (2015). Factors associated with incomplete childhood immunization in Arbegona district, southern Ethiopia: a case–control study. *BMC public health, 16*(1), 27.

O'Leary, S. T., & Maldonado, Y. A. (2018). Safety of Multiple Antigen Exposure in the Childhood Immunization Schedule. *Jama, 319*(9), 870-871.

Ortiz, J. R., Perut, M., Dumolard, L., Wijesinghe, P. R., Jorgensen, P., Ropero, A. M., . . . Teleb, N. A. (2016). A global review of national influenza immunization policies: Analysis of the 2014 WHO/UNICEF Joint Reporting Form on immunization. *Vaccine, 34*(45), 5400-5405.

Paterson, P., Meurice, F., Stanberry, L. R., Glismann, S., Rosenthal, S. L., & Larson, H. J. (2016). Vaccine hesitancy and healthcare providers. *Vaccine, 34*(52), 6700-6706.

Phadke, V. K., Bednarczyk, R. A., Salmon, D. A., & Omer, S. B. (2016). Association between vaccine refusal and vaccine-preventable diseases in the United States: a review of measles and pertussis. *Jama, 315*(11), 1149-1158.

Ramadan, H. A., Soliman, S. M., & El-kader, R. G. A. (2016). Knowledge, attitude and practice of mothers toward children's obligatory vaccination. *Journal of Nursing and Health Science, 5*(4), 22-28.

Shinjoh, M., Hoshino, K., Takahashi, T., & Nakayama, T. (2015). Updated data on effective and safe immunizations with live-attenuated vaccines for children after living donor liver transplantation. *Vaccine, 33*(5), 701-707.

Stutzman, L., & Cortney, D. (2019). The Importance of Immunizations in School-Aged Children.

Tan, M. T., & Matthews, K. R. (2018). Scientific Misconceptions and Myths Perpetuated in the 2017 Texas Legislative Session. *Issue Brief, 10*.

Vekemans, J., Crofts, J., Baker, C. J., Goldblatt, D., Heath, P. T., Madhi, S. A., . . . Saha, S. K. (2019). The role of immune correlates of protection on the pathway to licensure, policy

decision and use of group B Streptococcus vaccines for maternal immunization: considerations from World Health Organization consultations. *Vaccine*.

Ventola, C. L. (2016). Immunization in the United States: recommendations, barriers, and measures to improve compliance: part 1: childhood vaccinations. *Pharmacy and Therapeutics*, *41*(7), 426.

Vonasek, B. J., Bajunirwe, F., Jacobson, L. E., Twesigye, L., Dahm, J., Grant, M. J., . . . Conway, J. H. (2016). Do maternal knowledge and attitudes towards childhood immunizations in rural Uganda correlate with complete childhood vaccination? *PloS one*, *11*(2), e0150131.

Wang, H., & Liang, G. (2015). Epidemiology of Japanese encephalitis: past, present, and future prospects. *Therapeutics and clinical risk management*, *11*, 435.

Wilson, A. (2017). A 2-Part Study Examining; Hepatitis B Vaccination Rates Among High-risk Adults and the Influence of Education on Knowledge and Awareness of Hepatitis B and the Use of Vaccines as a Safe, Preventative Measure Among University of MS Students.

Wombwell, E., Fangman, M. T., Yoder, A. K., & Spero, D. L. (2015). Religious barriers to measles vaccination. *Journal of community health*, *40*(3), 597-604.

Yang, T. U., Song, J. Y., Noh, J. Y., Cheong, H. J., & Kim, W. J. (2015). Influenza and pneumococcal vaccine coverage rates among patients admitted to a teaching hospital in South Korea. *Infection & chemotherapy*, *47*(1), 41-48.

Yousif, M., Albarraq, A., Abdallah, M., & Elbur, A. Parents' knowledge and attitudes on childhood immunization, taif, saudi arabia. J Vaccines Vaccin 2013; 5: 215.